in reducing Tyroglyphid pests. It is found that mites will not injure wheat and flour in which the moisture content is 11 per cent. or less, whatever the temperature may be. When the moisture exceeds 13 per cent. they increase and flourish exceedingly; given favourable moisture conditions, the mites increase very rapidly between 60° and 75° F., while between 40° and 50° F. increase is retarded. The remedy advised for mite-infested wheat is to screen it thoroughly in order to remove as many of the mites as possible, and to subject it to treatment whereby the moisture is reduced, such as a blast of hot air followed by cooling. Prevention from attack may be secured by storing flour with a low moisture content—below 11 per cent. The lowest lethal temperature for the mites was found to be 120° F., which required at least six hours' application to be effective. In the form of appendices to the report are observations by Prof. Beattie on the degeneration of flour caused by bacteria, and by Mr. A. E. Humphries on an examination of flour samples into which acari had been introduced.

In the third report Prof. Dendy, in conjunction with Mr. H. D. Elkington, records the effect of air-tight storage upon other grain insects. It is claimed that air-tight storage is probably the most effective method of preserving all grain and cereal products from any insect or mite attack. It is particularly satisfactory to note that this method was found to be successful in destroying the larvæ of the notorious Mediterranean flour moth (*Ephestia kühniella*), along with the various other species dealt with. At the end of the report Prof. Dendy gives an account of experiments which go a long way towards proving that the beetles *Tribolium castaneum* and *Silvanus surinamensis* are unable to attack sound wheat. It appears, therefore, that these pests are of a secondary nature, only attacking and completing the destruction of already damaged grain. In a third article Prof. Dendy records observations which confirm the general opinion that *Calandra oryzae* and *C. granaria* are powerfully attracted by moisture. When water is present in sufficient quantity, *C. oryzae* is the more strongly attracted species.

In the forthcoming reports we shall look forward to a presentation of the results of testing these important laboratory experiments on a large scale in mills, warehouses, and elsewhere. During these times of food scarcity and high prices it is urgent that opportunities for this work should be afforded as speedily as possible. Every saving in grain destruction, with the consequent economy in the use of shipping, contributes towards the early settling down of the country to more normal conditions. To avoid waste in every form should be a keynote of national reconstruction. The importance of storage in air-tight receptacles is widely recognised in India, although the factors involved have not been understood. The initial difficulties of constructing air-tight silos and receptacles need to be surmounted. Once this is achieved, as Prof. Dendy remarks, the method is likely to prove valuable where large quantities of grain have to be stored for lengthy periods, especially in hot climates or even during long sea voyages. Air-tight storage is likely to prove effective not only as a preventive measure, but also as a remedy against badly weevilled grain. Both the Committee and the investigators directly concerned are to be congratulated upon the experimental results so far achieved. Fundamental observations of this nature can scarcely fail to prove beneficial to the State.

A. D. IMMS.

THE JEWELRY TRADE IN WAR-TIME.[1]

"MINERAL INDUSTRY" is an annual publication which treats of the state of the trade of the various minerals entering into commercial use in the United States during the previous year. The volume for the year 1917 did not appear until the close of last year. As for so many years past, the chapter in it on precious stones comes from the pen of the well-known authority on all that is concerned with gem-craft, Dr. G. F. Kunz, of New York. With his customary happy touch he interweaves the statistics of imports with much that is of interest to the economist and the mineralogist.

We have remarked before on a similar occasion that the jewelry trade acts as a very sensitive barometer indicative of the general state of trade in a country. The unpreparedness of the Allied nations for war, and especially of our own country had led to the placing of immense orders for munitions in the United States, and the consequent keen demand for labour brought sudden affluence to certain classes in the community. The result was that the imports of precious stones in 1916 reached unprecedented heights. By the following year the industrial position had become stabilised, and the imports stood at a figure—just under 41 million dollars—which was about that of the more prosperous years immediately preceding the war. It must, however, not be forgotten that prices had risen very considerably. Thus Dr. Kunz tells us that in Great Britain the cost of cut diamonds had advanced between 30 and 40 per cent., the increase being about equally divided between the rise in wages and the advance in the charge for the rough stones.

Many have remarked as a curious and unsatisfactory state of affairs that in the days before the war, whereas practically all the rough stones in the world passed through London, very few indeed of them were cut in England. A century ago things were different; then London vied with Amsterdam, but for some reason or other—possibly the want of a fostering hand—the industry pined and withered, and a few years ago had all but passed away. Under the stimulating care of Mr. Bernhard Oppenheim, efforts are now being made to restore the industry, and a very promising scheme, which has had the practical support of the powerful De Beers Company, is working at

---

[1] "The Production of Precious Stones for the Year 1917." By Dr. G. F. Kunz. "Mineral Industry," 1918, vol. xxvi., pp. 576-601.

© 1919 Nature Publishing Group

Brighton for enabling men partially disabled in the war to be trained in the craft of cutting gem-stones, and especially diamonds.

Of what in the trade are known as fancy stones, the most popular during the year under review appear to have been sapphire and emerald. Ruby still remains under a cloud, probably owing to the competition of the synthetical product. The Burmese jade, which is worked by Chinese and Japanese artificers, has been in considerable demand. Gem-stones, on account of their hardness, find a use in industry. The diamond drill is a familiar instance, but it may not be so well known that some electric motors have jewelled bearings; one factory in the United States used for that purpose no less than a ton of sapphire material.

Among the new occurrences of gem-stones referred to by Dr. Kunz may be mentioned opal, with an emerald-green to apple-green play of colour, from Hôsaka, Japan; black opal from Stuarts Range Field, South Australia; and chrysolite from Lac La Hache, British Columbia, which has been found in ten-carat stones. Dr. Kunz makes no reference to the beautiful blue zircons from India, which form one of the most interesting novelties in London jewelry of recent years; but, perhaps owing to the interruption of the ordinary trade channels, these stones had not, at least in any quantity, reached New York.

NOTES.

Additional interest has been given to the forthcoming commemoration of the centenary of the death of James Watt by the movement just inaugurated in Glasgow to found locally a James Watt chair of engineering at the University. Birmingham engineers decided some time ago that a similarly named chair should be installed in the University of their city, besides holding a centenary commemoration and erecting an international memorial to the three great pioneers, Watt, Boulton, and Murdock. The commemoration in Birmingham will be held on September 16–18. London, Glasgow, and Greenock, and, indeed, all parts of the country, are heartily co-operating, and, with few exceptions, the universities and scientific societies, together with many manufacturers and individual eminent men, are associating themselves with the scheme. In the Science Museum at South Kensington steps are being taken to arrange a comprehensive exhibition of Watt relics. In Birmingham the Watt relics existing there, which have so carefully been preserved by the forethought of Mr. George Tangye, and were a few years back presented to the city, will be completely re-arranged and displayed with many additions. Two pumping-engines made by Boulton and Watt will be seen; one, the first sold by the makers in 1776, will be actually shown under steam, and raising water. A memorial service will be held in the Parish Church at Handsworth, where the three contemporaries are buried. A garden-party will be held in the park at Heathfield Hall, where the garret workshop still remains as Watt left it. Lectures will be delivered by eminent men and a centenary dinner held. Some doubt seems to have been raised with regard to the claims of Birmingham to an international memorial. It should be remembered, however, that Watt's association with Boulton led to the success of his engine. Boulton's factory was famous for workmanship throughout Europe. It is true that Watt conceived his first ideas whilst working at the University in Glasgow, but he gained no practical success until he went to Birmingham. He spent the best part of his life there, including the evening of his days after he retired from business. The foundations he laid by scientific thought and careful study have resulted in the great and universal application of steam, and the appeal comes appropriately from Birmingham for an international memorial to him.

The Wilbur Wright memorial lecture was given on June 18 at the Royal Society of Arts by Mr. Leonard Bairstow. The subject was "The Progress of Aviation in the War Period," and the lecture commenced with a *résumé* of the progress made during the last five years, and a discussion of the possibilities of the present-day aeroplane for commercial purposes. By far the most interesting part of the lecture was that dealing with stability. An account was given of the use of the accelerometer to record the acceleration of a machine during any manœuvre, and of the information which has been obtained from its readings. Only in rare cases is the acceleration such as to reduce the pilot's apparent weight to zero, and in the majority of "stunts" he is pressed into his seat by a force greater than his normal weight. Mr. Bairstow exhibited a gyroscopic model which clearly showed the nature of stable and unstable oscillations, and then showed some lantern-slides made from accelerometer records, in which these types of oscillation had been observed on actual aeroplanes. He strongly emphasised the necessity for a thorough investigation of all the problems connected with the stability of aeroplanes, and expressed a hope that, now the war is ended, systematic research will be put in hand to provide fundamental data which will enable the scientific designer to treat stability with the same degree of certainty as he is now able to compute the performance of a machine. Mr. Bairstow's opinions on this point are of great interest, as he was the first to apply the results of wind-tunnel experiments on models to the complete calculation of the stability of a machine.

At the summer meeting of the Anatomical Society, held at the Royal College of Surgeons, London, on June 21, Major E. Distin Maddick exhibited a series of moving films which he had prepared to illustrate the application of the kinema to the teaching of anatomy. During the war Major Maddick designed and prepared many films for the use of cadets of the Royal Air Force, showing the building up and dismantling of aeroplanes and of aeroplane engines. In these films the spectator saw the various machines taken to pieces and the parts again assembled, exhibited and built up at a rate suitable to permit a demonstrator to name the various parts and explain their uses. It was this method which Major Maddick, who is a member of the College of Surgeons, has applied to the teaching of anatomy. His films show a human skeleton which turns its various aspects to the audience and then begins slowly to disintegrate until only the spinal column is left. The parts then begin to assemble, and part by part the skeleton is again built up. For large audiences desirous of becoming acquainted with the elements of human anatomy Major Maddick's films will serve a most excellent purpose, and are certain of a welcome by our soldiers in France and on the Rhine. The members of the Anatomical Society, while admiring the excellence of the technique shown by Major Maddick's films, expressed the hope that he would extend its application,

© 1919 Nature Publishing Group